Invitation for Comments on "Short List" Candidates for the Advisory Council on Clean Air Compliance Analysis and its Subcommittees
May 5, 2003

The EPA Science Advisory Board (SAB, Board) announced in the Federal Register of 68 FR 7531-7534, February 14, 2003, that it was requesting nominations for membership on the Council's Air Quality Modeling Subcommittee, Health and Ecological Effects Subcommittee, and experts in uncertainty analysis, statistical and/or subjective probability, and decision theory to supplement the Council. Background on the project and details on panel nomination process reviewed appear in the above referenced Federal Register notice and are also available at the SAB website, (www.epa.gov/sab).

In regard to the Air Quality Modeling Subcommittee, the SAB Staff Office has reviewed the 19 nominations for the Subcommittee, and has narrowed the list of nominees to a "Short List" of 13 candidates based on the qualifications and interest of the nominees. Brief biosketches of the 13 candidates on the current "Short List" are listed below for comment. In regard to the Health and Ecological Effects Subcommittee, the Science Advisory Board received 11 nominations for health effects experts. The SAB Staff Office has reviewed the nominations and narrowed the list of nominees to a short list of 8 individuals, whose biosketches also appear below. A "Health Effects Subcommittee" of the Council will be formed from individuals on this list. Because no experts in ecological effects were identified through the widecast process, the Staff Office has decided to request that the Council discuss forming a new subcommittee to focus on ecological effects or another mechanism to consider ecological effects, including coordination with a new SAB Committee on "Valuing the Protection of Ecological Systems and Services."

The SAB Staff Office We invites comments from the public on the short-list candidates identified below. We welcome information, analysis or documentation that the Board should consider in evaluating the "Short List" remaining candidates. This information will be carefully considered in selecting the subcommittee, which will be composed of 7-10 experts. Individuals should send their comments to Dr. Angela Nugent, Designated Federal Officer for the Panel, by May 15, via email to nugent.angela@epa.gov.

The SAB Staff Office Director, in consultation with SAB leadership, as appropriate, makes the final decision about who will serve on the subcommittee. SAB Staff will complete its review of information regarding conflict of interest, possible appearance of impartiality, and appropriate balance and breadth needed to address the charge. They review all the information provided by the candidates, along with any information that the public may provide in response to the posting of information

about the prospective panel on the SAB website during the "Short List Phase," and information gathered by SAB Staff independently on the background of each candidate.

Air Quality Modeling Subcommittee

Person	Organization	BioSketch
Allen,David T.	University of Texas	Dr. David Allen is the Gertz Professor of Chemical Engineering and the Director of the Center for Energy and Environmental Resources at the University of Texas at Austin. His research interests lie in environmental reaction engineering, particularly issues related to air quality and pollution prevention. He is the author of four books and over 125 papers in these areas. The quality of his research has been recognized by the National Science Foundation (through the Presidential Young Investigator Award), the AT&T Foundation (through an Industrial Ecology Fellowship) and the American Institute of Chemical Engineers (through the Cecil Award for contributions to environmental engineering). Dr. Allen was a lead investigator in one of the largest and most successful air quality studies ever undertaken: the Texas Air Quality Study (www.utexas.edu/research/ceer/texaqs). His current research is focused on using the results from that study to provide a sound scientific basis for air quality management in Texas. In addition, Dr. Allen is actively involved in developing Green Engineering educational materials for the chemical engineering curriculum. His most recent effort is a textbook on design of chemical processes and products, jointly developed with the U.S. EPA. Dr. Allen received his B.S. degree in Chemical Engineering, with distinction, from Cornell University in 1979. His M.S. and Ph.D. degrees in Chemical Engineering were awarded by the California Institute of Technology in 1981 and 1983. He has held visiting faculty appointments at the California Institute of Technology, the University of California, Santa Barbara, and the Department of Energy.
Alvarez,Ramon	Environmental Defense	Ramón Alvarez, Ph.D. has been a scientist in the Texas office of Environmental Defense since 1994. At Environmental Defense, he has promoted the attainment of air quality standards in Texas cities, with an emphasis on reducing emissions from electric power plants, cars and trucks. He also worked with industries on the US-Mexico border to find cost-effective methods of reducing waste and pollution. Dr. Alvare obtained a B.S. degree in chemistry from Duke University and a Ph.D. in physical chemistry from the University of California at Berkeley, where hecarried out research on atmospheric and combustion processes. At UC Berkeley he was a National Science Foundation Predoctoral Fellow and a lecturer in Environmental Chemistry. Dr. Alvarez is an expert on the technical and policy aspects of the State Implementation Plans for ozone in Dallas/Fort Worth and Houston/Glaveston. He currently serves on the Pollution Prevention Advisory Committee of the Texas Commission on Environmental Quality, and various technical advisory committees on air quality issues in Texas. He has also served on the Editorial Board of Environmental Engineering Science, the Board of Directors of the Texas Center for Policy Studies, and the Environmental Board of the City of Austin.
Chock,David	Ford Motor Company	Dr. David P. Chock received his B.A. degree with highest Honors in Chemistry from the University of California at Santa Barbara, and his Ph.D. degree in Chemical Physics from the University of Chicago. He was a Postdoctoral Fellow at the State University of New York at Buffalo, the Free University of Brussels, and the University of Texas at Austin, conducting research in electron-phonon interactions in semiconductors, dynamics of critical phenomena and hydrodynamic stability, respectively. He joined the General Motors Research Laboratories, and subsequently, Ford Research Laboratory, where he is the Leader of the Environmental Modeling Group in the Physical and Environmental Sciences Department. He has conducted a wide range of research related to the environment and its impact. This includes pollutant dispersion near roadways, improvement of numerical methods in air quality modeling by introducing accurate and fast algorithms to solve the advection equations and the stiff differential equations, extreme-value statistics of serially correlated data, time-series analysis, ozone trend analysis, statistical characteristics of the National Ambient Air Quality Standards, use of the random walk approach to study the impact of grid resolution and subgrid assumptions on air quality model predictions of a convective system containing fast nonhomogeneous atmospheric chemistry, and ozone impact of emissions from vehicles using alternative fuels, assessment of the benefit of an ozone-scavenging system for ambient ozone reduction. He has also conducted epidemiological studies, including the effect of confounding on results of incomplete models, the association of daily mortality and pollutant concentrations in Pittsburgh, and the impact of measurement errors on the detection of a health response threshold. More recently, he has been working on modification of the Comprehensive Air Quality Model (CAMx), application of a global chemistry transport model, and issues related to

		global climate change. He has published about 90 papers in refereed journals. He has also served on many EPA peer review panels, External Advisory Committees on Community Modeling and Analysis System (CMAS) and on an EPA STAR project. He was a Consultant on the AQMS panel of the Council.
Demerjian,Kenneth	State University of New York	Dr. Demerjian is Director of the Atmospheric Sciences Research Center (1986-present) and Professor in the Department of Earth and Atmospheric Sciences, University at Albany, State University of New York. He also holds an appointment in the Departments of Environmental Health and Toxicology in School of Public Health at SUNY and is a Visiting Scholar in the Division of Engineering and Applied Sciences at Harvard University. He holds a B.A degree in Chemistry from Northeastern University and M.S. and Ph.D. degrees in Physical Chemistry from the Ohio State University. Prior to coming to Albany, he was director of National Oceanic and Atmospheric Administration, Meteorology Laboratory, which was assigned under an interagency agreement to the U.S. Environmental Protection Agency. Dr. Demerjian has served on and chaired professional committees and advisory panels including state and federal legislative advisory boards, National Academy of Science Committees, editorial boards and national and international research programs. He recently co-chaired the NARSTO Ozone Assessment and currently serves on the Research Committee of the Health Effects Institute (HEI) and on the Board on Oceans and Atmosphere of the National Association of State Universities and Land-Grant Colleges (BOA-NASULGC). He has published over seventy journal articles and book chapters in the area of atmospheric chemistry, air quality modeling and atmospheric process science. His research interests in the photochemistry and reaction mechanisms of polluted and clean atmospheres were initiated during his graduate education and he has maintained active research programs in these and related areas for over three decades.
Hansen,Alan	Electric Power Research Institute (EPRI)	Since 1985, D. Alan Hansen has been the Manager of Tropospheric Studies for the Environmental Sector of the Electric Power Research Institute (EPRI). Dr. Hansen received his Ph.D. in Chemistry from the University of California, Irvine in 1973, and his B.A. in Chemistry from Southern Illinois University in 1967. Dr. Hansen's experience in modeling began in the Army as a member of a micrometeorological research group where he developed a model of the surface-atmosphere energy balance for various land covers. It continued at Southern Illinois University where he moonlighted by writing code for quantum mechanical simulations. It picked up again while an assistant research chemist at the Statewide Air Pollution Research Center of the University of California, Riverside, where he formulated the early code that, under the development of others, culminated in the SAPRC series of gas phase chemical mechanisms, while also studying hydroxyl radical kinetics and ozone-olefin chemiluminescence. After a hiatus from modeling of several years, while at ERT, he became a member of the team reviewing the development of the Acid Deposition and Oxidant Model (ADOM) under the sponsorship of the Canadian AES, the Ontario Ministry of the Environment (OME), the German Umweltbundesamt and EPRI. After joining EPRI, he managed EPRI's involvement with ADOM development which led to his participation in the formation of the Eulerian Model Evaluation and Field Study, a joint venture between, EPRI, AES, OME, EPA and the Florida Acid Deposition Monitoring Program, a major component of which was the comprehensive evaluation of RADM and ADOM. He chaired the EMEFS Working Group for it's formative first two years. As an EPRI Project manager he also managed modeling development projects with the University of Washington (rain band modeling) and Colorado State University (LES). From the perspective Dr. Hansen gained in managing these diverse model development and evaluation studies, and the recognition that modeling assessments of multiple air quality issues would be facilitated and made mutually consistent through the integration of specialized models into a single framework and adoption of cutting edge computational techniques, he initiated a project in 1989 at EPRI with a concept paper describing a "comprehensive modeling system" (CMS). To implement this concept, he established the Consortium for Advanced Modeling of Regional Air Quality (CAMRAQ), which produced an in-depth CMS design report (*Design of a Framework for the Development of a Comprehensive Modeling System for Air Pollution*, EPRI TR-106852, September 1996). With the emergence of EPA's Models-3 program, Dr. Hansen disbanded CAMRAQ and advocated the policy at EPRI that new air quality modeling technology developed by EPRI would be incorporated into the Models-3 framework. Since then Dr. Hansen continues to be active in managing model development and evaluation activities at EPRI, including the development of methods for estimating modeling uncertainty. He has served or serves on many air quality modeling review and advisory committees, including those for the tri-national Commission for Environmental Cooperation, the Texas Natural Resources Conservation Commission (now the Commission for Environmental Quality), the SESARM seasonal modeling project, NARSTO, and the Community Modeling and Analysis System. He currently is the Coordinator for NARSTO's Model Comparison and Evaluation Study, investigating the relative and absolute performance of air quality models used for ozone management assessments by EPA, Meteorological Service of Canada, Coordinating Research Council,

		Southern Company and others.
Jeffries,Harvey E.	University of North Carolina	Dr. Harvey Jeffries has been a Professor of Atmospheric Chemistry in the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill since 1971. He teaches graduate courses on atmospheric chemistry and photochemical modeling, including object-oriented design and programming. His research interests focus on gas phase atmospheric chemistry, specializing in volatile organic compound photooxidation with oxides of nitrogen to produce ozone, and the mathematical modeling of urban air chemistry, specifically, the development of numerical simulation models of photochemistry that become components of large scale Eulerian models incorporating meteorological and emissions sub models.. He has performed photochemical experimental and simulation research in smog chambers for 30 years and has been the lead investigator in the creation and implementation of a new photochemical reaction simulation methodology that uses morphecules (time varying, shape shifting molecules) to simulate the complex organic chemistry. Now, in collaboration with researchers from the UNC School of Medicine, he is conducting gas phase and particle experiments to test air quality effects on human lung cells. Dr. Jeffries has also been active in using these models to plan public policy for air pollution control. He is a scientific advisor to the NC state regulatory agency for the 8_ hour ozone nonattainment modeling for the NC SIP. He is a scientific advisor to the Business Coalition for Clean Air Appeal Group for the Houston Texas 1_hour ozone nonattainment modeling. He is a member (since 1996) of the US EPA's Science Advisory Council, Air Quality Modeling Subcommittee, and a member of the California Air Resources Board Reactivity Scientific Advisory Board. He was a founding member (since 1998) of the Reactivity Research Working Group, a public/private research coordinating effort involving US EPA, academia, and industry. He is a member (since 1999) of the Research Advisory Committee for the Texas Air Research Center at Lamar University in Beaumont. He is a member (since 2002) of the Science Advisory Committee of the Texas Environmental Research Consortium operated by the Houston Advanced Research Center. He was a member (1995_1997) of the US EPA's FACA Subcommittee for the Implementation of New Standards for Ozone, PM, and Regional Haze; he received an Exceptional Leadership Award from the US EPA (1997) as Cochair of Science and Technical Workgroup for this FACA Subcommittee.In regard to funding for his research, he has a new EPA CoOperative agreement for $1.5 Million for three years on Exposing Human Lung Cells to Photochemical Reaction gas and particle products. The other source of support is a three year project funded by the American Chemistry Council ($898,000), entitled "Innovative Experimental Techniques to Help Understand Exposure to Volatile Organic Air Toxics". "The overall goal of this project is to combine , develop and demonstrate new experimental techniques and methodologies that can be used to advance and prioritize the study of atmospheric chemical reactions of realistic mixtures including volataile organic air toxics and their transformation products, a significant subset of hazardous air pollutants (HAPS)."
Middleton,Paulette	Panorama Pathways	Dr. Paulette Middleton has almost 30 years experience leading programs that inform decisions and enhance understanding of the human-nature bond; building life-long, effective collaborations with organizations and individuals worldwide; and creating and using innovative communication strategies and assessment approaches. In 2002, she initiated Panorama Pathways, a consulting organization dedicated to creating steps to understanding and world peace. This past year she has developed several white papers and public information pieces on mercury in the west, impacts of pollution on visual air quality in the East, air quality impacts of oil and gas drilling operations in the West, benefits of reducing power plant emissions in Colorado, and nitrogen oxide issues in the western US. Middleton has been director of the Global Emissions Inventory Activity (GEIA) Center since GEIA's inception in 1990. For over a decade, she served and chaired a number of committees on the EPA Science Advisory Board. Middleton's professional background includes the University of Texas (PhD, Chemistry) the National Center for Atmospheric Research (staff scientist), the Atmospheric Sciences Research Center at the State University of New York at Albany (Research Faculty), Science & Policy Associates, Inc. (Vice President) and RAND (Director, RAND Environment). She has special expertise in integrated assessments, complex system modeling, strategic planning, ulti-media communication, program/project management, business development, facilitation, and education with a focus on air quality and related environmental, energy, economic and social concerns.
Morris,Ralph	Environ Corp.	Mr. Ralph E. Morris is a Principal at ENVIRON International Corporation where he directs air quality modeling and analysis, control strategy development and evaluation, and regulatory air issues projects. He has over 20 years experience in air quality issues, with particular emphasis in the development and application of advanced air quality models and the development of air quality control plans. He has directed or was one of the key developers of many of the photochemical grid models that have been used to develop ozone attainment State Implementation Plans (SIPs) in the U.S. including the UAM, UAM-V, and CAMx. He has BA and MA degrees in mathematics from the University of California and has been an air quality consultant since 1979. At ENVIRON Mr. Morris' contract support comes from EPA and other federal agencies, state agencies, local agencies, trade organizations, and industry. Mr. Morris has been instrumental to bringing state-of-the-art air quality modeling techniques to regulatory air quality planning including demonstrating the use of photochemical grid models for ozone SIP modeling in the 1980’s as

		leader of the EPA Five Cities UAM Study. Since then he has led the development of the next generation of nested-grid photochemical models (e.g., UAM-V and CAMx) and is currently leading the development of a state-of-science PMCAMx model that merges research-grade PM modules from academia (CMU and CalTech) with the CAMx platform. Mr. Morris has led or been involved in the development of ozone State Implementation Plans (SIPs) for numerous areas including: Los Angeles and San Francisco, CA; Houston/Galveston, Dallas-Fort Worth, and East Texas; Lake Michigan region; and St. Louis, MO. He has also led or been involved in the modeling of several PM SIPs, including: Los Angeles, Imperial County, and Owens Lake, CA; Rogue Valley OR; and Boise ID. ! Mr. Morris is currently assisting the Western Regional Air Partnership (WRAP) performing regional fine particulate and visibility modeling using the CMAQ and REMSAD models as part of the WRAP Regional Modeling Center (RMC). Mr. Morris was an original member of EPA's ozone guidance workgroup and is currently a member of EPA's fine particulate guidance workgroup. He is also currently a member of the CMAS Models-3/CMAQ External Advisory Committee (EAC) and is also a member of the Scientific, Technical, and Modeling Peer-Review Group (SMTPRAG) for the South Coast Air Quality Management District’s (SCAQMD)
Price,James	Texas Natural Resource Conservation Commission	Dr. James Price is senior scientist in the Texas Commission on Environmental Quality's (TCEQ's) Technical Analysis Division. He holds bachelor's degrees in mathematics and chemistry, a master's in biochemistry, and a doctorate in environmental engineering, all from the University of Texas at Austin. For the past twelve years his work has been primarily in the design of field research studies and air quality monitoring networks and in the analysis of the data from them to elucidate the quantitative contributions of different emission sources to observed pollutant concentrations and to identify and explain discrepancies between the results of air quality modeling of estimated emissions and measurements of actual pollutant concentrations. He led TCEQ's participation in science planning for the Texas 2000 Air Quality Study of ozone, PM2.5, and regional haze in the eastern half of Texas. The Texas 2000 Air Quality Study involved over 250 researchers from over 35 organizations including the Southern Oxidants Study, NOAA, and DOE along with the TCEQ and Texas university researchers. He also led development, selection, and contracting of $2.9 million in projects to accelerate the scientific analysis of data from the Texas 2000 Air Quality Study and resolve discrepancies between results from air quality modeling of estimated emissions and measured ambient concentrations. Except for brief work as a peer reviewer for the U.S. EPA, support of all of Dr. Price's work has come from the TCEQ, which is funded by the State of Texas with about a ten per cent contribution from the U.S. EPA. Dr. Price served on EPA's Clean Air Scientific Advisory Committee from 1994 to 1997 and on the Air Quality Modeling Subcommittee of EPA's Science Advisory Board from 1997 to 2002. He has been a member of the Air & Waste Management Association since 1977, serving as Chair of the Technical Program Steering Committee from 1991 to 1993 and as Technical Program Chairman for the association's 1988 Annual Meeting. Previously, Dr. Price initiated and led for over twelve years the development of Texas' environmental management program that assesses the health and welfare impacts of all air emissions from new and modified industrial sources of air emissions in the state. The assessments are based on predicted public exposure to ambient concentrations of air contaminants. Air quality dispersion modeling of estimated air emissions from the proposed facilities produces the estimates of future ambient concentrations to which the public may be exposed.
Rabideau,Chris	Shell Global Solutions	Mr. Chris Rabideau is a member of the Air Quality and Environmental Chemistry Consultancy in Shell Global Solutions. Educational Experience: B.S., Earth Science with Minor in Science and Environmental Change (1988) University of Wisconsin; Green Bay; M.S. Geography with emphasis in Meteorology (1990) Northern Illinois University. His experience in the air quality field covers, in particular, dispersion modeling, photochemical modeling, regulatory advocacy, atmospheric field studies, weather forecasting, and wastewater air emission estimation. Currently co-chair of the Texas Photochemical Grid Modeling Technical Oversight Committee. Active member of the Central States Regional Planning Association Modeling Workgroup; California Regional Air Quality Particulate Study and Central California Ozone Study technical committees; American Petroleum Institute Air Modeling Task Force and Clean Air Act Title I Task Force; Texas Air Research Center Advisory Board
Russell, Armistead	Georgia Institute of Technology	Armistead G. Russell is the Georgia Power Distinguished Professor and Coordinator of Environmental Engineering at the Georgia Institute of Technology. Professor Russell arrived at Georgia Tech in 1996, from Carnegie Mellon University, and has expertise in air quality engineering, with particular emphasis in air quality modeling and analysis. He earned his M.S. and Ph.D. degrees in Mechanical Engineering at the California Institute of Technology in 1980 and 1985, conducting his research at Caltech's Environmental Quality Laboratory. His B.S. is from Washington State University (1979). Dr. Russell has been a member of a number of the National Research Council's committees, including chairing the Committee to Review EPA's Mobile Model and chairing the committee on Carbon Monoxide Episodes in Meteorological and Topographical Problem Areas, and serving on the committee on Tropospheric Ozone Formation and Measurement, the committee on ozone forming potential of reformulated fuels and the committee on Risk Assessment of Hazardous Air Pollutants. He was also a member of the EPA FACA Subcommittee on Ozone, Particulate Matter and Regional Haze, the North American Research Strategy for Tropospheric Ozone and California's Reactivity Science Advisory Committee. Previously he was on the Office of Science, Technology and Policy's Oxygenated Fuels Program Review and various National

		Research Council program reviews. Dr. Russell is a member of the Air and Waste Management Association, American Association for the Advancement of Science, American Society of Mechanical Engineering, Tau Beta Pi, Sigma Xi and the American Association for Aerosol Research. Dr. Russell has won a variety of competitions for animations he has developed that depict the dynamics of pollutants have won a variety of prizes here and abroad, and his work was selected as a finalist for the prestigious Smithsonian Award for Computing in the Environmental Sciences. Recently, Prof. Russell led a multi-institutional effort to conduct air quality modeling of ozone, particulate matter and acid deposition to assist the Southern Appalachians Mountains Initiative to identify effective control strategies to improve air quality in Class I areas in the southern Appalachians. This work has been extended to detailed analysis of air quality strategies in Georgia, particulate matter modeling in the Southeast and Northeast, and development of a number of advanced numerical techniques for environmental modeling. For his service to National Research Council committees, he was recently selected as a National Associate of the National Academies. His funding comes from a variety of sources, including the US EPA, DoD, various states and state organizations, and the chemical, automotive and utility industries.
Walcek,Chris	SUNY	Dr. Chris Walcek is Senior Research Scientist. Atmospheric Sciences Research Center of the State University of NY Albany. Write proposals for research related to air pollution and the interactions with meteorology. Education background: PhD, MS, and in Atmospheric Sciences BS from UCLA, Physical meteorology/Cloud Physics emphasis. Area of expertise and research activities: Acid rain, ozone formation, heterogeneous chemistry, numerical methods air quality modeling, Mercury pollution, aircraft impacts. Service on advisory committees: Have served on 5-6 EPA Research Proposal and Fellowship review panels. Chaired the American Meteorological Society Atmospheric Chemistry committee 1996-2000 and organized two national meetings of that section. Recent Grant Support: Environmental Protection Agency, NY State Energy Research and Development Authority, Department of Energy, NASA.
Yarwood,Gregory	Environ International Corp.	Dr. Greg Yarwood is a Senior Consultant at ENVIRON Corporation. His main research interests and project activities are in atmospheric chemistry, photochemical modeling and the interpretation of ambient air quality data and photochemical model results. He was project manager and principle investigator for the development and implementation of ENVIRON's Ozone Source Apportionment Technology (OSAT) in both the Urban Airshed Model (UAM) and the Comprehensive Air Quality Model (CAMx). OSAT apportions model estimated ozone among emissions from selected source categories and geographical areas. Dr. Yarwood was co-Principal Investigator for a study to investigate the feasibility of using a 1996 field study in the Los Angeles basin to evaluate the ability of photochemical models to predict the change in air quality since the last major field study in 1987. He also managed a project that combined photochemical modeling and ambient data analyses for the North Slope of Alaska to estimate the potential impact of offshore drilling activities on tropospheric ozone levels near Prudhoe Bay. Dr. Yarwood performed extensive air quality (UAM) modeling of reformulated and alternative fuels for the joint Auto/Oil Air Quality Improvement Research Program (AQIRP). He was the technical lead for several AQIRP air quality modeling projects, such as fuel sulfur and light-olefin effects, sensitivity studies of the effects of uncertainties in biogenic and light-duty vehicle emissions, and sensitivity simulations using an alternative chemical mechanism (SAPRC) in the UAM. For each of these projects, Dr. Yarwood was responsible for overseeing the data analysis and emissions inventory development activities, and for integrating and explaining the data analysis, emissions, and air quality modeling issues and results. Dr Yarwood also managed a project for the EPA to review VOC receptor modeling and ambient measurement studies for evidence of biases in emission inventories.

"Health Effects Subcommittee"

Hurley,Fintan	Institute of Occupational Medicine (IOM)	Dr. Fintan Hurley is currently Research Director at the Institute of Occupational Medicine (IOM) – an independent non-profit organization carrying out research and consulting in occupational and environmental health, exposure and risk assessment – in Edinburgh, Scotland, UK. Dr. Hurley graduated 1st Honours B.A. in Mathematics, Statistics and Economics at the National University of Ireland (NUI) in Cork in 1970; MA (NUI) Mathematics and Statistics in 1971; post-graduate research in Bayesian methods at University of Edinburgh. His main research activities have been (i) epidemiological studies of the health effects of long-term occupational exposures to dusts, pesticides and (ii) since the early 1990s, on estimating the public health impacts and associated costs of outdoor air pollution, overall and from particular sources (electricity generation and transport…). His research experience has been multi-disciplinary, working closely with physicians, toxicologist, exposure specialists, ergonomists, economists, psychologists, mathematical modelers as well as other statisticians. Since 1996 he has been a member of the Committee on the Medical Effects of Air Pollutants (COMEAP) of the UK Department of Health and was from 1998-2002 a member of the Expert Panel on Air Quality Standards (EPAQS) of the UK Department of Environment (then, DEFRA). Sources of recent grant and/or contract support include the European Commission, the UK Health and Safety Executive, the UK Department of Health, DEFRA and various industries (e.g. London Underground).
Kinney,Patrick	Columbia University	Dr. Kinney is Associate Professor of Clinical Public Health in Environmental Health Sciences, Sc.D. Environmental Health Sciences/Air Pollution Control and Physiology at the Harvard University School of Public Health. His areas of research include Air pollution epidemiology, exposure assessment, exposure modeling, risk assessment. He is the Author of EPA ozone and PM criteria documents - epidemiologysections ; member of NAS panel on Health Benefits Analysis. Grant support: NIEHS, USEPA, National Urban Air Toxics Research Center.
Kleinman,Michael	University of California	Michael T. T. Kleinman is a Professor of Community and Environmental Medicine at the University of California, Irvine. He has a Ph.D. in Environmental Health Sciences from New York University and a M.S. in Chemistry (Biochemical Toxicology) from the Polytechnic Institute of Brooklyn. He also holds a B.S. in Chemistry from Brooklyn College, City University of New York. Dr. Kleinman has extensive experience in studies of the effects of airborne contaminants on health. His current research activities include inhalation studies with laboratory animals and human volunteers to test hypotheses related to defining causal relationships between health effects and components of ultrafine, fine and coarse pollutant particles. A key component in these studies, which include both laboratory based and epidemiological panel research programs, is the assessment of exposure and the relationship of exposure to dose. Dr. Kleinman also has had extensive experience in determinations of atmospheric transport of chemical contaminants. Dr. Kleinman has previously served as a consultant to the HEES. He currently is a member of the executive committee of the Southern California Particle Center and Supersite which is a multi-institutional consortium based at UCLA and which is supported by USEPA and the California Air Resources Board. He is currently the Chair of the Air Quality Advisory Committee for the state of California. This committee reviews the scientific basis of air quality regulations promulgated by the California EPA. Dr. Kleinman is a member of a National Academy of Sciences Committee to evaluate the preparation of the US Navy to operate in Chemical, Biological and Radiological Warfare situations. He was also the co-Chair of a National Academy of Sciences Committee to evaluate current capabilities related to Protection of Deployed Forces Against Chemical and Biological Weapons. He is the past chair of the Environmental Division of the Air and Waste Management Association and is a member of the executive committee of the University of California Toxic Substance Teaching and Research Program. Dr. Kleinman's current research support is from NIH, EPA, California Air Resources Board, and, in the past, he has had support from the Health Effects Institute, Electric Power Research Institute and Southern California Edison, among others.
Kunzli,Nino	University of Southern California	Dr. Nino Künzli, MD PhD, former Assistant Professor (P.D.) at the Institute for Social and Preventive Medicine (ISPM) at the University of Basel (Switzerland), is Associate Professor at University of Southern California Keck School of Medicine (Department of Preventive Medicine; Environmental Health Science Division), Los Angeles. As an environmental epidemiologist, his main areas of focus are exposure to and health effects of ambient air pollution and the public health impact of these effects. He is a co-investigator and member of research teams such as the Swiss Study on Air Pollution and Lung Diseases in Adults (SAPALDIA; Swiss National Science Foundation), the

		European Community Respiratory Health Survey II (European Community Research Programs), where he leads the Air Pollution Central Unit, the European Population Exposure Distribution Assessment Study (EXPOLIS), and the UC Berkeley Ozone Study (Prof. Ira Tager; NIH grant). At USC he collaborates with the repeated cohort Children Health Study on air pollution and health in 12 South Coast Basin communities (NIH). He serves on national and international expert committees and as reviewers of the major journals in this field. With the Trinational European Air Pollution Impact Assessment project, published in Lancet, he intensified particularly a debate about the interpretation of air pollution epidemiology and its application to risk assessment. The concepts published in the American Journal of Epidemiology have been subject of several committees such as from WHO, leading to methodological guidelines and further work by many others. He was a member of the U.S. National Academy of Sciences NRC Committee on Estimating the Health-Risk-Reduction Benefits of Proposed Air Pollution Regulations which also addressed the issue of how to interpret effect estimates from different study designs.
Lioy,Paul J.	UMDNJ - Robert Wood Johnson Medical School	Dr. Paul J. Lioy, is a professor of Environmental and Community Medicine at UMDNJ-Robert Wood Johnson Medical School, Piscataway, N.J. He is Deputy Director for Governmental Relations at the Environmental and Occupational Health Sciences Institute (EOHSI) a joint program of Rutgers University and UMDNJ and also directs the Institute's program in Exposure Measurement and Assessment. Dr. Lioy was the 1998 Recipient of the International Society of Exposure Analysis Jerome Wesolowski Award for Lifetime Achievement in Exposure Analysis and in 2003 he is the recipient of the Frank Chambers Award in Air Pollution from the Air and Waste Management Association. He has been a member of the Science Advisory Board (SAB) of the US EPA (1991-2003), and was a member of its Advisory Council of Clean Air Compliance Analysis and Chair of the Health and Ecological Effects Committee. Currently, he is a consultant to the SAB on the CASAC. Dr. Lioy is a member of the US-Canada International Joint Commission Air Quality Advisory Board and a Fellow of the Colleagium Ramazzini. He was the Program Chair for the 1997 and 2000 Annual Conference of the International Society for Exposure Analysis (ISEA). He is one of the founders of ISEA and was President from 1993-94. Dr. Lioy has been a member of the National Academy of Sciences Board of Toxicology and Environmental Studies, and was chair of their first committee devoted to Exposure Assessment and a member of various committees including Ozone, Particulate Matter, DOE Waste Sites, and Epidemiology. He has been an academic councilor to the New Jersey Legislature, and a member or chair of state councils and committees. He has been an executive editor or associate editor of a number of journals that deal with environmental science and/or air pollution, and has over 200 peer-reviewed publications. His research focuses on major Environmental Health problems, which include basic research on the measurement and modeling of exposure and dose derived for environmental agents that reach individuals, and those that can be derived from single or multiple routes of exposure.
Lippmann,Morton	New York University School of Medicine	Current professional affiliations and positions held by Dr. Lippman include: Professor, NYU School of Medicine, Area(s) of expertise, and research activities and interests: Human environmental exposure assessment and associated health effects, respiratory tract dosimetry, aerosol science and technology, risk assessment .Leadership positions in national associations or professional publications or other significant distinctions: Past Chair of: EPA SAB CASAC SAB Exposure Comm. NIOSH Board of Scientific Counsellors Amer. Conf. of Governmental Industrial Hygienists, Past President: International Society of Exposure Analysis, Educational background, especially advanced degrees, including when and from which institutions these were granted: B.Ch..E. (1954) - The Cooper Union S.M. (1955) - Harvard Univ.Ph.D. (1967) - New York Univ. Sources of recent (i.e., within the preceding two years) grant and/or other contract support, from government, industry, academia, etc., including the topic area of the funded activity: Center Grants: EPA - PM Health Effects Research NIEHS - Environmental Health Sciences EPA Cooperative Agreement: Personal Exposure to PM.
Ostro,Bart	California Office of Environmental Health Hazard Assessment (OEHHA)	Bart Ostro, Ph.D., is currently the Chief of the Air Pollution Epidemiology Unit, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. His primarily responsibilities are to formulate the Agency's recommendations for state ambient air quality standards and to investigate the potential health effects of criteria air pollutants. His previous research on mortality and morbidity effects of air pollution, has contributed to the determination of federal and state air pollution standards for ozone and particulate matter. Dr. Ostro was also a co-author of the EPA regulatory impact analysis that was a basis for the federal ban of lead in gasoline. Dr. Ostro has served as a consultant with several federal and international institutions including the World Health Organization and the World Bank, and with several foreign governments including Mexico, Indonesia, Italy, the European Union, Thailand, and Chile. He currently serves on the National Academy of Sciences' Committee on Estimating the Health Risk Reduction Benefits of Proposed Air Pollution Regulations, and is on the Scientific Oversight Committee for ATHENA (Air Pollution Health Effects in Europe and North America) for the Health Effects Institute. Dr. Ostro received a Ph.D. in Economics from Brown University and a Certification in Environmental

		Epidemiology from the State of California. He has published over 60 articles on air pollution epidemiology and environmental economics in peer reviewed journals. His current research interests involve conducting epidemologic studies on the mortality and morbidity effects of criteria air pollutants, examining the health effects of traffic, and quantifying the health benefits and associated uncertainties related to air pollution control.
Parkin, Rebecca	George Washington University	Dr. Rebecca T. Parkin is an Associate Research Professor in the Department of Environmental and Occupational Health with a joint appointment in the Department of Epidemiology and Biostatistics in the School of Public Health and Health Services at The George Washington University. She is also the Scientific Director of the Center for Risk Science and Public Health at the University. Previously Dr. Parkin was director of Scientific, Professional and Section Affairs at the American Public Health Association; the assistant commissioner of the Division of Occupational and Environmental Health at the New Jersey Department of Health; and an environmental epidemiologist at the Centers for Disease Control. Her areas of expertise include environmental epidemiology, public health policy, vaccine risk/benefit communication, and environmental health risk assessment and communication. She has been a member of the National Research Council's (NRC's) Water Science and Technology Board; and has served on numerous committees of the NRC, the Institute of Medicine, Environmental Protection Agency, Health and Human Services, and Agency for Toxic Substances and Disease Registry. Throughout her career, she has served as a site visitor for the Council on Education for Public Health, and as a peer reviewer for several professional journals focused on environmental health. Recently, she has coauthored a book on the CCL microbial pathogens and related risk assessment issues. Dr. Parkin received her A.B. in sociology from Cornell University; M.P.H. in environmental health and Ph.D. in epidemiology from Yale University; and Certificate in Science, Technology, and Policy from Princeton University. She has been honored by Yale University as a Distinguished Alumna for her extensive public service.

Additional Experts to Supplement the Council in Areas Needed for the Third 812 Analysis

Evans, John	Harvard University	Dr. Evans is Senior Lecturer in Environmental Science at Harvard School of Public Health, where he serves as co-director of the Program in Environmental Science and Risk Management. He holds a B.S.E. (Industrial Engineering) and a M.S. (Water Resources Management) from the University of Michigan and earned his S.M. and Sc.D. in Environmental Health Sciences at Harvard. Dr. Evans has worked in the field of risk analysis for over twenty years and has emphasized the importance of characterizing uncertainty in estimates of health risks in his research. He has experience in uncertainty analysis and has conducted several studies using formally elicited expert judgment to describe uncertainty in environmental health risks. His recent work has examined the role of decision and value of information analysis in setting priorities for environmental research. Dr. Evans has been a member of the Society for Risk Analysis since it was founded; has served as the Chair of the New England Chapter, and as both a member of the Editorial Board of the SRA's journal Risk Analysis and as an area editor of Risk Analysis. He was a member of the NAS Committee on Estimating the Health Benefits of Air Pollution Regulations and also served on the EPA Science Advisory Board (Drinking Water Committee). Dr. Evans' current research funding comes largely (over 90%) from the Government of Kuwait. In the past his work has been funded by a number of sources, including the US EPA Office for Research and Development, the Mexican Government (through subcontracts with MIT), several corporations and individuals (through contracts with and/or gifts to the Harvard Center for Risk Analysis), Health Canada, and the US Nuclear Regulatory Commission.
Hattis, Dale	Clark University	Dr. Dale Hattis is Research Professor with the Center for Technology Environment and Development (CENTED) of the George Perkins Marsh Institute at Clark University. For the past twenty-seven years he has been engaged in the development and application of methodology to assess the health ecological and economic impacts of regulatory actions. His work has focused on the development of methodology to incorporate interindividual variability data and quantitative mechanistic

		information into risk assessments for both cancer and non-cancer endpoints. Specific studies have included quantitative risk assessments for hearing disability in relation to noise exposure renal effects of cadmium reproductive effects of ethoxyethanol neurological effects of methyl mercury and acrylamide and chronic lung function impairment from coal dust four pharmacokinetic-based risk assessments for carcinogens (for perchloroethylene ethylene oxide butadiene and diesel particulates) an analysis of uncertainties in pharmacokinetic modeling for perchloroethylene and an analysis of differences among species in processes related to carcinogenesis. He has recently been appointed as a member of the Environmental Health Committee of the EPA Science Advisory Board and for several years he has served as a member of the Food Quality Protection Act Science Review Board. Currently he is also serving as a member of the National Research Council Committee on Estimating the Health-Risk-Reduction Benefits of Proposed Air Pollution Regulations. The primary source of his recent cooperative agreement support is the U.S. Environmental Protection Agency and specifically the Office of Research and Development's National Center for Environmental Assessment. This research includes: (1) Age related differences in susceptibility to carcinogenesis; towards a quantitative analysis of empirical data. Instrument number (Term: April 2002-Sept 2003); (2) Methods for evaluating human interindividual variability regarding susceptibility to particulates (Term Sept 98--September 2002); and (3) also funding from the State of Connecticut to work on Child/Adult differences in pharmacokinetic parameters, as a subcontractor as part of a cooperative agreement. He has been a councilor and is a Fellow of the Society for Risk Analysis and serves on the editorial board of its journal Risk Analysis. He holds a Ph.D. in Genetics from Stanford University and a B.A. in biochemistry from the University of California at Berkeley.
North, Warner	North Works Inc	Dr. D. Warner North is president and principal scientist of NorthWorks, Inc., a consulting firm in Belmont, California, and consulting professor in the Department of Management Science and Engineering at Stanford University. Over the past thirty years Dr. North has carried out applications of decision analysis, risk analysis, and cost-benefit analysis for electric utilities in the US and Mexico, for the petroleum and chemical industries, and for US government agencies with responsibility for energy and environmental protection. He has served as a member and consultant to the Science Advisory Board of the US Environmental Protection Agency since 1978,and as a Presidentially appointed member of the US Nuclear Waste Technical Review Board (1989-1994). Dr. North is a co-author of many reports dealing with environmental risk for the National Research Council of the National Academy of Sciences, including "Risk Assessment in the Federal Government: Managing the Process" (1983), "Improving Risk Communication" (1989),"Science and Judgment in Risk Assessment" (1994), and "Understanding Risk: Informing Decisions in a Democratic Society" (1996).Dr. North was a member of the Board on Radioactive Waste Management of the National Research Council from 1995 until 1999. He was the chair for the steering and advisory committees for the International Workshop on the Disposition of High-Level Radioactive Waste, held November 4-5, 1999, and leading to the National Research Council report, "Disposition of High-Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges," published in June 2001.Dr. North is a past president (1991-92) of the international Society for Risk Analysis, a recipient of the Frank P. Ramsey Medal from the Decision Analysis Society in 1997 for lifetime contributions to the field of decision analysis, and the 1999 recipient of the Outstanding Risk Practitioner Award from the Society for Risk Analysis. Dr. North received his Ph.D. in operations research from Stanford University and his B.S. in physics from Yale University.
Wallsten, Thomas	University of Maryland	Dr. Thomas S. Wallsten is a professor in the Department of Psychology and in the Program in Cognitive Science and Neuroscience. He received his Ph.D. from the University of Pennsylvania in 1969, did a postdoctoral fellowship at the University of Michigan in 1970, and then joined the faculty at the University of North Carolina, Chapel Hill. He was professor of psychology and director of the Cognitive Science program when he left UNC-CH in 2000. Over the past years he was a visiting professor or visiting scholar at the University of Chicago, Duke University, Haifa University in Israel, and University of Oldenburg in Germany. He is a mathematical and cognitive psychologist with expertise in subjective probability, judgment, choice, decision behavior, and related areas of decision science and cognitive psychology. His current research focuses on subjective probability encoding and representation, communication of opinion, and human information processing under uncertainty. This research has been supported over the past 30 years primarily by grants from the National Science Foundation (NSF), with occasional additional

		support from other agencies. Current grants are from NSF and the Air Force Office of Scientific Research. Among his advisory roles, he was editor of the Journal of Mathematical Psychology from 1990-1994, associate editor of Psychometrika from 1984-1988, associate editor of the Journal of Experimental Psychology: Learning, Memory, and Cognition from 2000-2003, and on numerous editorial boards. He served in various advisory roles for NSF: During 1995-1997 on the grant review panel for Methodology, Measurement, and Statistics Program in the Division of Social, Behavioral, and Economic Research; in 2000 as a member of the Committee of Visitors for Social, Behavioral, and Economic Sciences Directorate; in 2003 as a member of the Committee of Visitors for the Behavioral and Cognitive Sciences Directorate; in 1998 on an ad hoc NSF_EPA grant review panel. In 2002,he was a grant review panel member for the Cognition and Student Learning Program of the Department of Education Office of Educational Research and Improvement.